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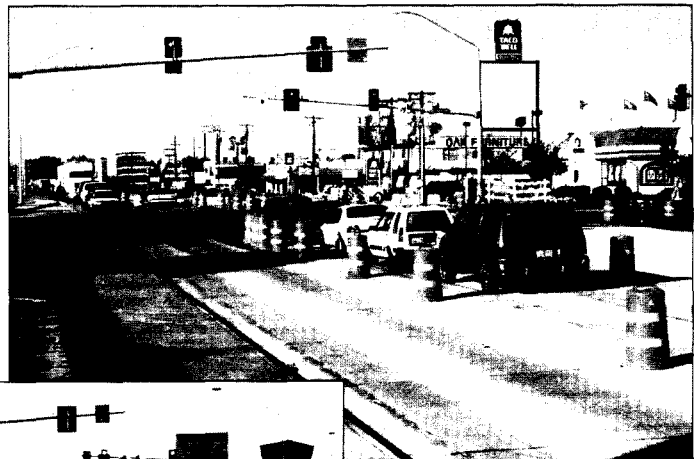
eventy-two hours and time to spare. Faced with three intersections on U.S. 395 in Kennewick, Washington, that needed to be completely reconstructed last fall, the Washington State Department of Transportation (DOT) took the unconventional route and shut each intersection down completely for one weekend to perform the necessary repair work with full depth concrete. The roads were closed at 7:00 p.m. on a Thursday and were required to be re-opened by 6:00 a.m. on Monday. In each case, the contractor, Inland Asphalt, completed the work ahead of schedule and the roads were back in service by Sunday evening.

"Many people think concrete streets require 14 or 28 days of curing before allowing traffic on them," says Tom Nelson of the American Concrete Pavement Association (ACPA). However, these intersections were reconstructed with a high early-

strength Portland cement concrete mix that allowed the roads to be opened to traffic within about 12 hours. To ensure that the project stayed on schedule, the contractor used a critical path timeline based on hours, not days. Inland Asphalt also employed such techniques as keeping an extra milling machine onsite as a backup, in case the machine being used broke down.

Equally critical was keeping area residents and businesses informed about the reconstruction plans and letting motorists know about alternate routes. Numerous meetings

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Three intersections in Kennewick, Washington, were completely closed to traffic for 3 days, allowing for uninterrupted reconstruction work.



U.S. Department
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**Federal Highway
Administration**

Out in 72 Hours

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The three intersections were reconstructed with full depth concrete.



were held during the design phase of the project to allow for public input. The DOT also contacted local business owners prior to the construction work to explain the reconstruction process and held weekly meetings to update the media. Media coverage started a week before the actual road closures, which allowed the public time to prepare for using detour routes. "Going into this, the community was skeptical. But when all was said and done, they were very happy that they were only affected one weekend," says Nelson.

Following the weekend closures, the DOT interviewed about 40 businesses surrounding the intersections. While all of the businesses reported being affected by the closures and most had experienced a loss in sales, every respondent indicated that he or she would support weekend closures in the future for reconstruction work, rather than construction occurring over a longer period of time. Typical responses included: "Less impact overall," "Get it over with—It is more clogged doing it during the week," and "Businesses will not be affected as long with closures."

"The DOT's South Central Region was very pleased with the way things went. The project ran smoothly. We got the people in, got the job done, and impacted the pub-

lic for just a short time," says Jeff Uhlmeier of Washington State DOT.

To highlight the project and how it was accomplished, the Washington State DOT, Federal Highway Administration, and ACPA held an open house on June 19, 2001. The event was intended for design and construction personnel, material suppliers, contractors, and representatives from government agencies. It drew 75 people from Canada, Oregon, Idaho, Montana, and Washington State, with city and county agencies, public works offices, contractors, consultants, and State DOT officials all represented. Attendees heard from the project engineer and the contractor, as well as the city manager and local merchants. They also had the opportunity to tour the project sites and see the finished product. "Everyone was very impressed," says Nelson.

The intersection reconstruction work was documented as part of the Innovative Pavement Research Foundation's re-

"The DOT's South Central Region was very pleased with the way things went. The project ran smoothly. We got the people in, got the job done, and impacted the public for just a short time."

search program. A video and report on the reconstructions are currently being prepared. For more information on the Kennewick intersection reconstructions, contact Jeff Uhlmeier at Washington State DOT, 360-709-5485 (email: uhlmej@wsdot.wa.gov), or Tom Nelson at ACPA, 360-956-7080 (email: nelsontl@uswest.net).



Rhode Island Keeps Bridge Data at Its Fingertips

With the touch of a button, bridge inspectors at the Rhode Island Department of Transportation (DOT) can instantly call up reports on 341 separate bridge inspection items, thanks to a custom-designed database. For Rhode Island, the database has turned what was often a cumbersome inspection reporting process into a fast and streamlined system, making it easier for the State to evaluate its structures and prepare the annual Structural Inventory and Appraisal reports required by the Federal Highway Administration.

The database was developed by Supervising Civil Engineer Al Santoro, who took commercially available software and customized it for Rhode Island DOT's needs. He then combined the software with an Integrated Bridge Inspection Information System (IBIIS), which provides optical support for the database. The IBIIS allows inspectors to scan in photos, videos, plan sheets, and other items to augment the details contained in bridge inspection reports. This allows for greater quality control, as the inspection reports can be compared to the bridge plans and photos to make sure they are consistent.

The database has also made the reporting process much more efficient. In the past, each inspection of a particular bridge would start from scratch with a blank form. Now, inspectors have the benefit of comments from previous inspections, so that the quality of information on each bridge gets better as time goes on. "Initially bridge inspectors thought it would make their job harder, but

over time they saw that it really made their job easier," says Bridge Inspection Engineer Marc Bruneau.

The detailed reporting system allows a user to pinpoint deficient portions of a particular bridge. The database differentiates every beam, girder, bearing, etc., on each span of every bridge. Thus, the DOT can precisely identify which girders are deficient and where they are located. And since the advent of the database, inspectors no longer have to prepare separate deficiency reports. The system generates these reports automatically, placing deficiencies in three categories: "Reportable," "Needs Attention," and "Critical."

The database also integrates the inspection process with the maintenance and planning processes. Repairs that have taken place since the last inspection are documented in the database and this information is made available to the bridge inspectors.

Future planned improvements to the system include upgrading it so that the data can be imported into software programs such as Excel and broadening access so that other sections of Rhode Island DOT can link directly to the database.

"Although this system was customized to meet Rhode Island's needs, I believe it could be adapted for use by other State DOTs," says Santoro.

For more information, contact Al Santoro at 401-222-2355 (fax: 401-222-1424; email: asantoro@dot.state.ri.us), or Marc Bruneau at 401-222-2355 (fax: 401-222-1424; email: mbruneau@dot.state.ri.us).

"Although this system was customized to meet Rhode Island's needs, I believe it could be adapted for use by other State DOTs."

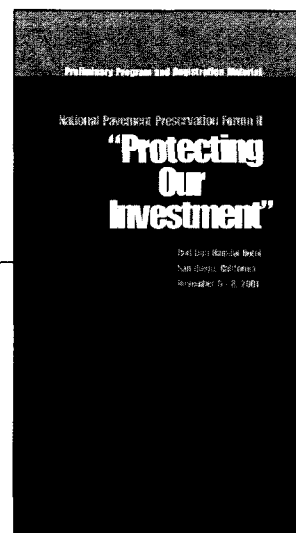
National Pavement Preservation Forum II: Protecting Our Investment

November 6-8, 2001,
San Diego, CA

This follow-on conference to the 1998 Forum for the Future will again bring together champions and practitioners in the pavement preservation arena. Conference breakout sessions will cover such topics as:

- Pavement management treatments,
- Innovative contracts,
- Asset management,
- Developing pavement preservation partnerships, and
- Introducing new products and techniques to your agency.

For more information or to register, contact The Foundation for Pavement Preservation at 703-538-3542 (fax: 703-241-5603; email: jlfiegel@aol.com). You can also find registration information on the Web at www.fp2.org/.



In Brief . . .

Now available are printed copies of four **manuals of practice on pavement repair materials and procedures**, originally published as a two-volume set by the Strategic Highway Research Program and recently updated by the long-term pavement performance (LTPP) program. Each of the following manuals includes a discussion of the most appropriate time to apply a particular treatment, what types of materials and construction methods should be used, and how to evaluate the performance and cost-effectiveness of a repair procedure:

- *Materials and Procedures for Rapid Repair of Partial-Depth Spalls in Concrete Pavements* (Publication No. FHWA-RD-99-152)
- *Materials and Procedures for Repair of Potholes in Asphalt-Surfaced Pavements* (Publication No. FHWA-RD-99-168)
- *Materials and Procedures for Repair of Joint Seals in Portland Cement Concrete Pavement Joints* (Publication No. FHWA-RD-99-146)

- *Materials and Procedures for Sealing and Filling Cracks in Asphalt-Surfaced Pavements* (Publication No. FHWA-RD-99-147).

The manuals also contain step-by-step procedures for ensuring a high-quality repair and a list of sources for materials and equipment.

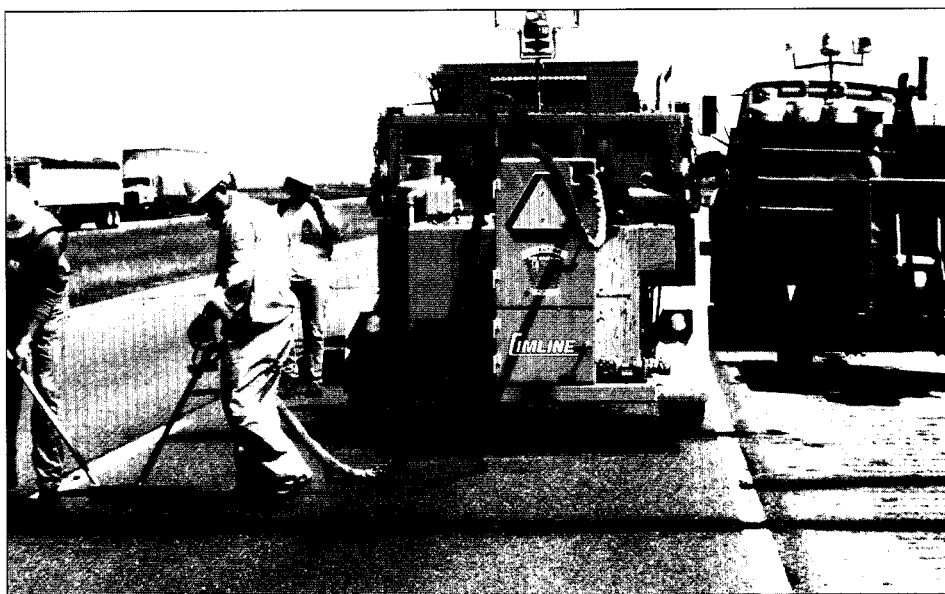
A limited number of printed copies of the manuals are available from the FHWA Research and Technology Report Center, 301-577-0818 (fax: 301-577-1421; email: mgreen@fhwa.dot.gov). Copies can also be downloaded from the LTPP Website at www.tfhr.gov/pavement/ltpp/mofpract.htm.

The long-term pavement performance program's *LTPP Product Plan* (see July 2001 *Focus*) can now be downloaded from the LTPP Website at www.tfhr.gov/pavement/ltpp/brochure.htm.

Looking for an old copy of *Focus*? An **archive of past issues** stretching back to 1995 can be found online at www.tfhr.gov/focus/focus.htm.

The LTPP program has awarded four **new 5-year contracts for the collection and processing of pavement performance data by region**. Data collection and processing will be handled by Stantec in the North Atlantic region, ERES Consultants in the North Central States, Fugro-BRE in the Southern Region, and Nichols Consulting Engineers in the Western States. For more information, contact Jack Springer at FHWA, 202-493-3144 (fax: 202-493-3161; email: jack.springer@fhwa.dot.gov).

A new study of the performance of pavement edge drains at Specific Pavement Study (SPS) -1, -2, and -6 sites was recently launched by the LTPP program. Staff from consulting firm Fugro-BRE will be visiting the SPS sites this fall to determine the condition of the drains and whether or not they are working. A report is scheduled to be issued in Spring 2002. For more information, contact Jack Springer at FHWA, 202-493-3144 (fax: 202-493-3161; email: jack.springer@fhwa.dot.gov).



The LTPP program's recently updated Manuals of Practice include information on materials and procedures for pothole repair.

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New Standard Adopted for Recycled Glass in Pavements

The use of recycled materials in pavements has received a boost with the adoption of a new national specification for recycling glass in soil aggregate base courses. The specification, entitled "Glass Cullet Use for Soil Aggregate Base Course," was adopted by the American Association of State Highway and Transportation Officials (AASHTO) in December 2000 and will be published in the next edition of AASHTO's *Standard Specifications for Transportation Materials of Sampling and Testing*.

The specification notes that, "When properly processed and mixed with natural or crushed aggregate, hauled to, and properly spread and compacted on a prepared grade to appropriate density standards, glass cullet can be expected to provide adequate stability and load support for use as road or highway bases."

The new standard was developed as part of a research project conducted by the Recycled Materials Resource Center (RMRC) at the University of New

Hampshire. This project is designed to investigate the properties of selected recycled materials and to develop guidance specifications for highway construction applications in an AASHTO format. Overseeing the effort is a technical advisory group composed of representatives from 15 State departments of transportation (DOT).

"The new AASHTO specification conforms nicely with what we're doing in Minnesota," says Roger Olson of the Minnesota DOT and a member of the Technical Advisory Group. Minnesota's specification allows for up to 10 percent glass cullet use in base courses.

"The specification makes it easier for States," says Frank Palise of New Jersey DOT and also a member of the Technical Advisory Group. "Without a specification, it is particularly hard for county or municipal engineers to try something new. Having an AASHTO

specification makes it easier for States to give the stamp of approval."

According to Taylor Eighmy of the RMRC, "The glass cullet specification was one that many States were asking for. There was a lot of interest in it. We're now actively working with States to develop the additional specifications that they need."

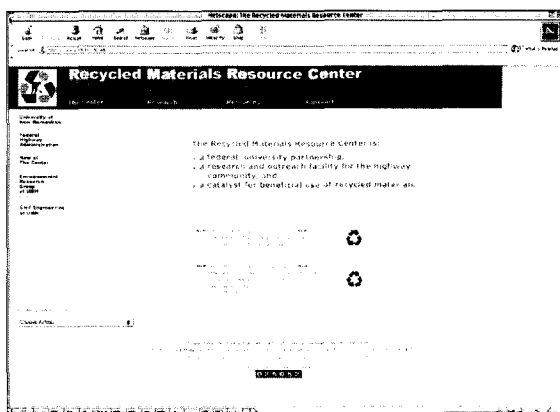
The five additional specifications currently being developed by the RMRC research project are:

- Recycled Concrete Pavement as an Aggregate Substitute Material in Granular Base

- Recycled Concrete Pavement as an Aggregate Substitute in Portland Cement Concrete Pavements
- Recycled Asphalt Pavement Used in Hot-Mix Asphalt (HMA) at Hot-Mix Plants
- Use of Asphalt Shingles as Asphalt Cement Replacement in HMA
- Coal Fly Ash Use in Embankments

The glass cullet specification can be downloaded from the Web at www.rmrc.unh.edu/Research/Rprojects/project13/Specs/AASHTO-Rev-03-13-01.pdf. For more information on the specification, contact Taylor Eighmy at 603-862-1065 (fax: 603-862-3957; email: t.eighmy@rmrc.unh.edu).

The 13 million tires currently being recalled nationwide by the Ford Motor Company will be recycled, with Ford having expressed a desire to see them reused in paving applications. FHWA has been asked by Ford to provide technical support for this effort. Other partners that FHWA has asked to join in the effort include AASHTO, the National Asphalt Pavement Association, Rubber Pavements Association, and the RMRC. For more information, contact Byron Lord at FHWA, 202-366-1324 (fax: 202-493-2070; email: byron.lord@fhwa.dot.gov).



Highway Technology Calendar

The following events provide opportunities to learn more about products and technologies for building and maintaining better, safer roads.

Fifth International Conference on Managing Pavements

August 11–14, 2001, Seattle, WA

The objective of the conference is to further enhance the understanding and use of pavement management by transportation agencies and practitioners. Sponsors include the Washington State Department of Transportation, Foundation for Pavement Research, Asphalt Institute, International Society for Asphalt Pavements, Transportation Research Board, and the Federal Highway Administration (FHWA).

Contact: University of Washington Engineering Professional Programs Office, 206-543-5539 (fax: 206-543-2352; email: pavement@engr.washington.edu).

Sixth Annual Eastern Winter Road Maintenance Symposium and Equipment Expo

September 5–6, 2001, Worcester, MA

The event offers an overview of the latest in winter maintenance techniques, as well as new products and equipment and how to plan for all aspects of storm management.

Contact: Deborah Vocke at FHWA, 410-962-3744 (fax: 410-962-3419; email: deborah.vocke@fhwa.dot.gov).

Context Sensitive Highway Design: Transferring Lessons from Our Collective Experiences

September 5–7, 2001, Missoula, MT

The goals of the workshop include sharing information on and advancing the

practice of context-sensitive design for highway and other transportation projects. The workshop is being sponsored by the Montana Department of Transportation, Western Transportation Institute, and FHWA.

Contact: Meetings Northwest at 406-273-7224 (fax: 406-273-2494; email: csdworkshop@meetingsnorthwest.com).

Seventh International Conference on Concrete Pavements

September 9–13, 2001, Orlando, FL

Designed for pavement and geotechnical engineering professionals, the conference's focus is on using concrete to develop long-lasting pavement solutions for the 21st century. The event will highlight new technologies related to the design, construction, and rehabilitation of various types of concrete pavements.

Contact: Shiraz Tayabji at Construction Technology Laboratories, Inc., 410-997-0400 (fax: 410-997-8480; email: stayabji@ctlggroup.com; Web: iscp.tamu.edu).

National Pavement Preservation Forum II: Protecting Our Investment

November 6–8, 2001, San Diego, CA

The conference will feature breakout sessions on such topics as innovative materials, fast track projects, long-term maintenance, and performance specifications.

Contact: The Foundation for Pavement Preservation at 703-538-3542 (fax: 703-241-5603; email: jlfiegel@aol.com).

Beneficial Use of Recycled Materials in Transportation Applications Conference

November 13–15, 2001, Washington, DC

The conference will bring together experts from North America, South America, Europe, and Asia to address the use of recycled materials generated from transportation, industrial, municipal, and mining processes in transportation applications. Event sponsors include the University of New Hampshire's Recycled Materials Resource Center, FHWA, National Asphalt Pavement Association, and the National Association of Counties.

Contact: The Recycled Materials Resource Center at 603-862-4704 (fax: 603-862-3957; email: rmrc@rmrc.unh.edu).

Asphalt Pavement Conference

November 14–16, 2001, Austin, TX

Presented by the Asphalt Alliance, the conference's theme is "A Lifetime of Smooth Performance." The conference is designed for paving professionals in both the public and private sectors.

Contact: Carol Prouty at the Asphalt Pavement Alliance, 888-468-6499 (fax: 301-731-4621; email: meetings@AsphaltAlliance.com).

Data Integration Forum and Peer Exchange: Bringing Databases Together for Asset Management

December 12–13, 2001, Chicago, IL

The forum will feature presentations on a wide range of issues related to

FHWA Course Offers New Look at Pavement Preservation

data integration and data sharing in support of comprehensive asset management.

Contact: Roemer Alfelor at FHWA, 202-366-9242 (fax: 202-366-9981; email: roemer.alfelor@fhwa.dot.gov).

Third International Symposium on 3D Finite Element for Pavement Analysis, Design, & Research

April 2–5, 2002, Amsterdam, The Netherlands

The symposium will highlight new worldwide developments in the use of the 3D finite element method for investigating pavement structural problems.

Contact: Samir N. Shoukry at West Virginia University, 304-293-3111, ext. 2367 (fax: 304-293-6689; email: samir.shoukry@mail.wvu.edu; Web: www.3dfem.org).

International Center for Aggregates Research (ICAR) 10th Annual Symposium

April 14–17, 2002, Baltimore, MD

The symposium will feature discussion on asphalt concrete, bases, and fines. The event is being cosponsored by the Aggregates Foundation for Technology, Research, and Education and the National Stone, Sand, and Gravel Association.

Contact: ICAR at 512-471-4498 (email: icar@mail.ce.utexas.edu; Web: www.ce.utexas.edu/org/icar).

2-day course entitled, *Pavement Preservation: The Preventive Maintenance Concept* (Course No. 131054), is now available by request from the Federal Highway Administration (FHWA), through the National Highway Institute (NHI). The course serves as an introduction to preventative maintenance programs and highlights the importance of these programs to successful pavement preservation.

The Preventive Maintenance Concept centers on the information required to develop or improve a preventative maintenance program, and examines the steps that California, Georgia, Michigan, New York, and Texas have used in developing their own preventative maintenance programs. Included in the course is a description of the currently available tools and technologies, such as fog seals, under-sealing, and hot in-place recycling, that make preventative maintenance programs possible. An extensive list of references for each tool and technology covered is also provided. Upon completion of the course, participants will be able to:

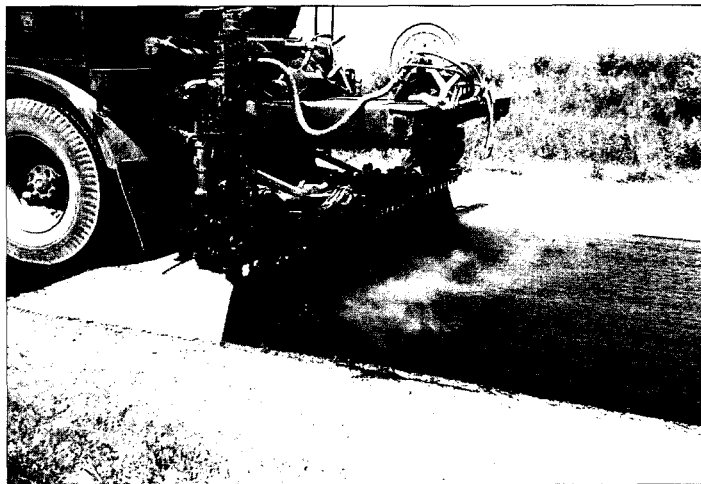
- Identify the components of a preventative maintenance program.
- Identify various pavement preservation techniques and materials and discuss

the need for performance evaluation and pavement condition analysis.

- Discuss the effects of various treatments on pavement performance and pavement condition indices.
- Describe the importance of integrating pavement preservation into pavement management systems.
- Explain cost/benefit concepts.

The course's intended audience is upper and mid-level highway agency professionals who are responsible for pavement preservation and maintenance. The cost is \$230 per participant. This is the first of four planned courses on the subject of pavement preservation. The second course in the series, *Pavement Preservation: Selecting Pavement for Pavement Maintenance*, will be available this fall.

For information on scheduling the course, contact Lynn Cadarr at NHI, 703-235-0528 (email: lynn.cadarr@fhwa.dot.gov). For technical information on the course, contact Julie Trunk at FHWA, 202-366-1557 (email: julie.trunk@fhwa.dot.gov). More information is also available at the NHI Website (www.nhi.fhwa.dot.gov/131054.html).



The new NHI course highlights the importance of preventative maintenance programs to successful pavement preservation.

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FHWA Deputy Executive Director:
Vincent F. Schimmoller

Managing Editor: Zachary Ellis
Tel: 202-493-3193 (fax: 202-493-3475)
zac.ellis@fhwa.dot.gov

Editor: Lisa Pope
Tel: 202-347-1448 (fax: 202-347-6938)
lgpope@woodwardclom.com

Federal Highway Administration (HRTS)
6300 Georgetown Pike
McLean, VA 22101-2296

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Is the Concrete Lab Coming Your Way?

The following is an updated 2001 schedule for FHWA's Mobile Concrete Laboratory (see February 2001 *Focus*). For more information on scheduling a visit by the lab, contact Gary Crawford at FHWA, 202-366-1286 (fax: 202-493-2070; email: gary.crawford@fhwa.dot.gov), or Leif Wathne at FHWA, 202-366-1335 (fax: 202-493-2070; email: leif.wathne@fhwa.dot.gov).

Note: This schedule is tentative and is subject to change.

August 5-24	Field testing for Wacker Drive high-performance concrete (HPC) project in Chicago, Illinois
September 9-13	Open house at Seventh International Conference on Concrete Pavements in Orlando, Florida
September 17-October 12	Field testing for mixture evaluation at I-99 HPC bridge project in State College, Pennsylvania
October 15-17	Open house at North Eastern States Materials Engineers' Association Conference in Albany, New York
October 28-31	Open house at American Concrete Institute Fall Convention in Dallas, Texas

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